

remove the chemical liquor from the chips. In other words, before the chips are subjected to refining, including defibration, the wood chips are pretreated by the steps of:

compression → chemical liquor dipping → pressure release to achieve chemical liquor impregnation → compression to achieve chemical liquor removal

to effectively remove flavonoids, lignin and metals that inhibit bleaching, and to enable production of mechanical pulp having a high brightness even from wood that is ordinarily difficult to bleach. The pretreated wood chips are then subjected to the treatment, in sequence, of defibration by primary refining, bleaching and beating by secondary refining, or the treatment, in sequence, of defibration by primary refining, beating by secondary refining, and bleaching to prepare mechanical pulp having high brightness.

The process of claim 1 is distinguishable from Prusas in a number of respects.

Initially, Prusas discloses that before impregnation with the alkaline liquor, the chips are usually destructured or shredded (column 5, lines 5-12). Such pretreatment is in contrast to the process of claim 1 in which wood chips, rather than destructured or shredded wood chips, are compressed and the pressure released to impregnate wood chips with the chemical liquor.

Additionally, Prusas discloses impregnation of wood chips with an alkaline chemical liquor containing a chelating agent in the production of chemithermomechanical pulp only when hydrogen peroxide is used in the alkaline chemical liquor (column 5, lines 45-48) to prevent decomposition of the peroxide by metal ions, such as iron and manganese ions in the wood. In other words, if hydrogen peroxide is not used in the alkaline chemical liquor, as is the case of Applicant's process of claim 1, a chelating agent is not used since it is not required, nor is its use without hydrogen peroxide suggested. Thus, since a peroxide is not used in the process of claim 1, use of a complexing agent in the process of claim 1 for the purpose of inhibiting complexation of flavonoids and simultaneously removing metal ions, as

stated on page 8, lines 17-22 of Applicants' specification would be unobvious, as it is neither taught nor suggested by Prusas.

Finally, Prusas does not disclose the pretreatment process of claim 1 in combination with the sequential step of the present invention, namely (a) defibration by primary refining, bleaching and beating by secondary refining, or (b) defibration by primary refining, beating by secondary refining and bleaching.

Thus, the rejection of claims 1 and 2 over Prusas should be withdrawn.

**Rejection of Claims 3 and 4 Under 35 U.S.C. § 103(a)**

Claims 3 and 4 are rejected as being unpatentable over Prusas in view of U.S. Patent Publication No. 2001/0050151 A1 to Sabourin. Sabourin is relied on as showing the compression ratio recited in claims 3 and 4.

Prusas is deficient for the reasons given above. Sabourin does not cure the deficiencies of Prusas. Sabourin does not describe the step of removing the impregnated chemical liquor by compressing the impregnated chips at a compression ratio of 4:1 to 8:1 to drain the impregnating chemical liquor from the chips, as recited in claims 3 and 4. Rather, Sabourin discloses (page 4, column 1, lines 9-11) conveyance of the impregnated wood chips to a chamber by means of a plug screw feeder. Such use of a plug screw feeder would not result in compression of the wood chips to remove upon release of an applied compression pressure, a chemical liquor from the impregnated wood chips, and thus would not result in the compression ratio of 4:1 to 16:1 for draining of the impregnating chemical liquor, as recited in claims 3 and 4.

Where a reference does not disclose a feature of a claim relied on to distinguish the prior art, it cannot suggest modifying the prior art to contain that feature, see *In re Civitello*, 144 USPQ 10 (1964) wherein the CCPA stated:

Since Haslacher fails to disclose the feature of the claim relied on, we do not agree with the Patent Office that it would suggest modifying the Craig bag to contain that feature. The Patent Office finds the suggestion, only after making a modification which is not suggested, as we see it, by anything other than appellant's own disclosure. This is hindsight reconstruction. It does not establish obviousness. (Emphasis the Court's).

See also *In re Glass*, 176 USPQ 489 (1973) wherein the CCPA stated that it is error to ignore specific limitations distinguishing over the references.

It is noted that Sabourin does not disclose use of a chelating agent in the chemical liquor. Accordingly, removal of substances which inhibit bleaching by impregnating wood chips with a chemical liquor comprising a chelating agent and compressing the chemical liquor impregnated wood chips at a compression ratio of 4:1 to 16:1 to remove the chemical liquor, as recited in claims 3 and 4, is neither described nor suggested in either Prusas or Sabourin. Thus, the rejection of claims 3 and 4 should be withdrawn.

#### **Rejection of Claims 8-10 and 12-14 Under 35 U.S.C. § 103 (a)**

Claims 8-10 and 12-14 are rejected over U.S. Patent No. 2,687,943 to Pete (hereinafter "Pete") in view of Prusas, both newly cited.

The process of claim 8 involves washing defibrated pulp, that has been subjected to primary refining but not bleaching, by diluting the defibrated pulp with water at a temperature of 5 to 95 C° to a concentration of 0.5 to 5.0% and thereafter dehydrating the diluted pulp slurry by a press on a filter to achieve washing efficiency of 52.6 to 99.2%. The washed pulp is then bleached and further beaten by secondary refining. The resultant mechanical pulp has a Hunter brightness of 45 to 65%. Thus, by washing the defibrated pulp after primary refining to sufficiently remove anionic impurities, such as polyphenols, which inhibit bleaching, a high brightness pulp can be obtained.

Pete is deficient in many respects. Namely, Pete does not describe a process in which washing is performed between the steps of primary refining and secondary refining,

particularly since Pete does not disclose defibrating wood chips by primary refining nor the use of secondary refining whatsoever. Additionally, Pete does not disclose achieving a washing efficiency of 52.6 to 99.2%.

Rather, Pete discloses pretreating pulp with a non-oxidizing calcium salt, diluting defibrated pulp with water to a concentration of 5%, dehydrating the washed pulp with a filter or centrifuge and subsequently bleaching the liquor. Pete is silent as to use of primary refining, beating by secondary refining and achieving the washing efficiency claimed.

Such deficiencies are not remedied by Prusas, who does not wash pulp as recited in claim 8, after primary refining and before bleaching. Thus, Prusas cannot achieve the washing efficiency recited in claim 8 and cannot remedy the deficiencies of Pete. As indicated above in the *In re Civitello* decision, when a reference does not disclose a feature of a claim relied on to distinguish the prior art, it cannot suggest modifying the prior art to contain that feature.

Thus, since the prior art do not disclose the claimed method, the rejection based on Pete in view of Prusas should be withdrawn, since it is based on a hindsight reconstruction and does not establish obviousness.

Moreover, the Office Action indicates (page 5, first full para.) that it would be obvious to a person of ordinary skill in the art to optimize the washing efficiency. However, the Examiner is referred to the tests in Applicants' specification which demonstrate unobviousness of the claimed process. Thus, the Hunter brightness achieved in Example 14 (para. bridging pages 20-21) in which pulp is subjected to primary refining, washing, dehydration, bleaching and beating by secondary refining and a washing efficiency of 97.6% utilized to achieve a Hunter brightness of 64.7. Such treatment is compared with the Hunter brightness achieved in comparative Example 5 (page 21, lines 15-27) in which the same process is used with the same hydrogen peroxide concentration of 8%, but without the

washing step. As indicated in Table 2 on page 22 and the description in the paragraph bridging pages 22-23, it is seen that a Hunter brightness of only 49.7% is achieved by comparison, since the polyphenols responsible for low bleachability were not removed by washing. Likewise, as indicated on page 25, lines 13-21, the Hunter brightness achieved in each of Examples 14-18 in which the washing efficiencies were in the 52.6-97.6 range achieved a Hunter brightness that was 8.4 to 15% higher than that achieved in Comparative Example 5. Such results further demonstrate that Prusas, which teaches neither washing as recited in claim 8 nor the claimed washing efficiency range, is properly combinable with Pete, nor does it remedy the deficiencies of Pete.

Thus, the rejection of claim 8 and all claims ultimately dependent from claim 8, namely claims 9, 10 and 12-14, should be withdrawn.

**Rejection of Claims 5 and 6 Under 35 U.S.C. § 103(a)**

Claims 5 and 6 are rejected as being unpatentable over Prusas as applied to claims 1 and 2, in view of Pete.

The combination of Prusas and Pete has been discussed above, in detail, and is improper for the reasons given. Accordingly, the rejection of claims 5 and 6 should be withdrawn. It is noted that the patent to Danielsson et al is mentioned in the last paragraph on page 6. As indicated in the Interview Summary received with the Office Action of April 19, 2006, the reference to Danielsson et al in the Office Action of April 5, 2006 was not intended, so that such patent need not be addressed.

In view of the foregoing comments, reconsideration and allowance are requested.

Respectfully submitted,



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